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EXAMINER	
PATEL, TAYAN B	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/506,310	DESTREZ ET AL.	
	Examiner	Art Unit	
	Tayan Patel, Esq.	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims

1. Applicant is advised that should claim 22 be found allowable, claim 23 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC §§ 112/101

2. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5-9 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 5, it is unclear as to how a resistance between the potential and the earth electrode would function in the system to measure a voltage representing the current discharge from the at least one electrode with a small radius of curvature to the

at least one electrode with a large radius of curvature because resistance does not measure voltage. As such, the recitation of measuring a voltage is indefinite and will not be considered.

As to claim 6, it is unclear how a transformer measure a current representing the current discharges from the at least one electrode with a small radius of curvature to the at least one electrode with a large radius of curvature because a transformer does not measure current. As such, the recitation of measuring a current is indefinite and will not be considered.

As to claims, 7-9 and 16-18, they are rejected because the base claim has been rejected.

5. Claims 24-40 provide for the operation of the system at a desired moisture, pressure and temperature, but, since the claim does not set forth any steps involved in the system, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 24-40 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-3, 5-6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in vie of Nagasaka et al (US 4805069).

As to claim 1, Kim et al discloses a system for generating plasma comprising a dc power source, 7, with a high voltage output section, 7, (the high voltage output section further defines the dc power source to be a high voltage generator) and a transformer, 8, (a transformer control the voltage input and output) (See column 3, lines 32-67) connected to at least two electrodes, 73 and 74 (See column 9, line 25-34; See also figure 11D). However, Kim et al fails to disclose a first electrode with a small radius of curvature and a second electrode with a large radius of curvature wherein the current is discharged from the first electrode to the second electrode.

Nagasaka et al discloses a system wherein plasma is generated by corona discharge (See column 2, lines 50-58) wherein desired polarity plasma electrode, 3, is a needle electrode having a small radius of curvature at its tip end and forms a low voltage side plasma electrode, whereas an opposite polarity plasma electrode, 4, is a needle electrode having a large radius of curvature at its tip end and forms a high voltage side plasma electrode, and between these two electrodes is intermittently applied a high voltage of 20,000-80,000 volts from a D.C. voltage surface, 5, through a discharge gap, 5b, generating bipolar corona discharge (See FIG. 1), (See column 5, lines 4-29); and traversing an ionic current which flows radially from the corona discharge electrode (small radius electrode) towards the cylindrical electrode (large radius) (the act of controlling is achieved by the relative flow from a smaller radius electrode to a larger radius electrode) (See column 2, lines 13-24) in order to form plasma at the tip ends of the respective electrodes (See column 5, lines 5-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the large radius and small radius electrodes and current discharge in Nagasaka et al in the system of Kim et al in order to form plasma at the tip ends of the respective electrodes.

As to claim 2, modified Kim et al discloses all of the claimed limitations as discussed with respect to claim 1 above, wherein Kim et al further discloses that the large radius electrode is plate shaped, therefore exhibiting planar geometry. See figure 11; See also column 9, lines 25-34.

As to claims 3 and 14, modified Kim et al further discloses all of the claimed limitations as discussed with respect to claim 1 and 2 above, respectively, wherein Kim et al discloses that during the course of rising of voltage at the lead, 39, a wave current process develops from the upper electrode in the form of two solid (3-D, spatial) sinusoids and grows as it reaches the lower electrode (See figure 12C; See also column 10, lines 26-37). However, modified Kim et al fails to disclose a dielectric insulator between the electrodes.

Nagasaka et al disclose a tubular passage made of insulating material (the insulating material is a dielectric since charges are flowing through the passage between the electrodes) between two plasma electrodes of opposing polarities in order to charge the powder material (powder material creates the plasma between electrodes in Kim et al) with the desired polarity at the outlet of the tubular passage. See column 4, lines 3-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the insulator in Nagasaka et al in the system of modified Kim et al in order to charge the powder material (powder material creates the plasma between electrodes in Kim et al) with the desired polarity at the outlet of the tubular passage.

As to claim 5, modified Kim et al discloses all of the claimed limitations as discussed with respect to claim 1 above, yet fails to disclose a resistance between an earth potential and the at least one electrode with a large radius of curvature.

Nagasaka et al further discloses protective resistors 3a-1R and 3a-2R between the large radius electrode and earth potential (See figure 1 – ground potential at ends of the circuit) in order to form plasma induced by minute spark discharges (See column 8, lines 27-67) (Kim et al requires discharges in order to form plasma).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the protective resistors in Nagasaka et al in the system of modified Kim et al in order to form plasma induced by minute spark discharges.

As to claim 6, Kim et al further discloses a transformer, 8. See column 3, lines 32-41.

9. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) as applied to claim 3 and 14 above, respectively, and further in view of Dickson (US 5761073).

As to claims 4 and 15, modified Kim et al discloses all of the claimed limitations as discussed with respect to claim 3 and 14 above, respectively, wherein Kim et al discloses an AC voltage reducing transformer, 8, a bridge rectifier, 9, and a capacitor filter, 10; wherein the structure of the primary resonance circuit, 13, constituting the electronic oscillator, 1, involves a non-linear capacitor, 17, as well as the input low voltage section, 14, of the resonance transformer, 4. The primary resonance circuit, 13, also includes an amplifying (control) element, 3, e.g., a transistor (See column 3, lines 42-50). In addition, the plasma generator is optionally equipped with a drive unit, 2, which is connected to the amplifying (control) element, 3, and provides cyclic switching on and off of the amplifying (control) element, 3, or another special drive mode (See

column 3, lines 51-56). However, modified Kim et al fails to explicitly disclose the low voltage signal generator having a specified fixed frequency.

Dickson discloses a circuit with a voltage generator (See abstract) wherein the target pulses have a constant period (frequency) so that the mark/space ratio varies in order to attain an ideal pulse width (the percentage correction of the pulse width is what is being achieved by keeping a constant period). See column 6, lines 20-51.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the constant period for variable mark/space ratio in Dickson in the system of modified Kim et al in order to attain an ideal pulse width.

10. Claims 7-8 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) as applied to claims 5 and 6 above, respectively, and further in view of Murayama et al (US 4587460).

As to claims 7 and 16, modified Kim et al discloses all of the claimed limitations as discussed with respect to claims 5 and 6 above, respectively, where Kim et al further discloses a high voltage generator (See column 3, lines 32-67), yet fails to disclose a high pass filter.

Murayama et al discloses a high voltage generator (See column 3, lines 40-67) wherein a high pass filter is used in order to cut off high frequency components, while passing low frequency components. (See column 4, lines 13-13).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the high pass filter in Murayama et al in the system of modified Kim et al in order to cut off high frequency components, while passing low frequency components.

As to claims 8 and 17, modified Kim et al discloses all of the claimed limitations as discussed with respect to claims 7 and 16 above, respectively, wherein Kim et al further discloses a conversion system/AC voltage reducing transformer, 8 (transformers create a changing magnetic field which induces a changing voltage which may represent electrical discharge in a plasma generating system) (See column 3, lines 31-41).

11. Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) in view of Murayama et al (US 4587460) as applied to claims 8 and 17 above, respectively, and further in view of Newlin (US 5737163).

As to claims 9 and 18, modified Kim et al discloses all of the claimed limitations as discussed with respect to claim 8 and 17 above, respectively, wherein Kim et al discloses a circuit comprising a transformer and transistor (See column 3, lines 31-41), yet fails to disclose a control system at a specified set value to said mean frequency of occurrence of the current discharges.

Newlin discloses an apparatus comprising a circuit comprising a transformer and switching means (a transistor) and further comprising a watchdog circuit, 170 (See figure 1) used for monitoring the oscillator circuit in order to disconnect the input voltage

from the transformer winding if the oscillator circuit's output frequency falls below a predetermined threshold frequency for more than a predetermined time (See column 2, lines 41-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the watchdog circuit (control system) in Newlin in the system of modified Kim et al in order to disconnect the input voltage from the transformer winding if the oscillator circuit's output frequency falls below a predetermined threshold frequency for more than a predetermined time.

12. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) as applied to claims 3 and 14 above, respectively and further in view of Peters (US 3953783) in view of Dickson (US 5761073).

As to claims 10 and 19, modified Kim et al discloses all of the claimed limitations as discussed with respect to claims 3 and 14 above, respectively, wherein Kim et al further discloses a circuit with a high voltage generator (See column 3, lines 32-41), yet fails to disclose a high voltage chopper for distributing alternately, a positive continuous high voltage and a negative continuous high voltage to the electrode with a small radius of curvature.

Peters discloses a circuit with a high voltage generator comprising a high voltage chopper, SCR 17 (choppers pulse positive and negative voltages) in order to provide a low power trigger pulse during low levels of supply voltage (this is desired in modified

Kim et al because it will provide the necessary voltage during low voltage cycles). See column 50, lines 45-69.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the high voltage chopper in Peters in the system of modified Kim et al in order to provide a low power trigger pulse during low levels of supply voltage (this is desired in Kim et al because it will provide the necessary voltage during low voltage cycles – See column 3, lines 42-49).

However, modified Kim et al fails to disclose the control of a low voltage signal generator within a specified fixed frequency and a variable mark-space ratio.

Dickson discloses a circuit with a voltage generator (See abstract) wherein the target pulses have a constant period (frequency) so that the mark/space ratio varies in order to attain an ideal pulse width (the percentage correction of the pulse width is what is being achieved by keeping a constant period). See column 6, lines 20-51.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the constant period for variable mark/space ratio in Dickson in the system of modified Kim et al in order to attain an ideal pulse width.

13. Claims 11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) as applied to claims 1 and 2 above, respectively, and further in view of Lafonta et al (US 4732457).

As to claims 11 and 20, modified Kim et al discloses all of the claimed limitations as discussed with respect to claim 1 and 2 above, respectively, yet fails to explicitly disclose the high voltage generator as continuous.

Lafonta et al discloses a high voltage generator circuit that is capable of producing a continuous high voltage, thus operating continuously (See column 1,lines 49-64), in order to supply high voltages to the cell (See column 1, lines 42-47) (Kim et al discloses a circuit which can alternatively be referred to as a cell – See column 3, lines 51-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the continuous high voltage in Lafonta et al in the system of modified Kim et al in order to supply high voltages to the cell.

14. Claims 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) in view of Lafonta et al (US 4732457) as applied to claims 11 and 20 above, respectively, and further in view of Dickson (US 5761073).

As to claims 12 and 21, modified Kim et al discloses all of the claimed limitations as discussed with respect to claims 11 and 20 above, respectively, wherein Kim et al further discloses a bridge rectifier, 9, connected to the high gain transformer, 8, with a transistor, 3, in cyclic switching on and off of the amplifying (control) element (See column 3, lines 42-56). However, modified Kim et al fails to disclose control of a low

voltage signal generator within a specified fixed frequency and a variable mark-space ratio.

Dickson discloses a circuit with a voltage generator (See abstract) wherein the target pulses have a constant period (frequency) so that the mark/space ratio varies in order to attain an ideal pulse width (the percentage correction of the pulse width is what is being achieved by keeping a constant period). See column 6, lines 20-51.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the constant period for variable mark/space ratio in Dickson in the system of modified Kim et al in order to attain an ideal pulse width.

15. Claims 13 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al (US 5909086) in view of Nagasaka et al (US 4805069) as applied to claim 1 and 2 above, respectively, and further in view of Wu et al (US 6365102).

As to claims 13 and 22-23, modified Kim et al discloses all of the claimed limitations as discussed with respect to claims 1 and 2 above, respectively, further disclosing a plasma generator (See column 3, lines 50-55), yet fails to disclose a system for plasma sterilization in the presence of moisture, at atmospheric pressure and at ambient temperature.

Wu et al discloses a plasma generator (See column 6, lines 1-13) comprising a system of plasma sterilization in a chamber (See column 2, lines 35-44) achieved in the presence of moisture (See column 5, lines 7-13), at atmospheric pressure (See column 5, lines 56-67) and at ambient temperature (temperature above ambient temperature is

still considered ambient) (See column 9, lines 1-9) in order to generate plasma at a lower power (See column 2, lines 55-59).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plasma sterilization system with moisture, atmospheric pressure and ambient temperature in Wu et al in the system of modified Kim et al in order to generate plasma at a lower power.

16. Claims 24-40 are rejected under 103(a) as being unpatentable over modified Kim et al as applied to claims 4-12 and 14-21, respectively.

Here, the claims merely recite intended use of the system as provided by moisture, atmospheric pressure and ambient temperature. As such, each of claims 24-40 do not further limit the base claim from which they depend.

17. Claims 24-40 are rejected under 103(a) as being unpatentable over modified Kim et al as applied to claims 4-12 and 14-21, respectively, and further in view of Wu et al (US 6365102).

Here, modified Kim et al in each of claims 4-12 and 14-21 fail to disclose a system for plasma sterilization in the presence of moisture, at atmospheric pressure and at ambient temperature.

Wu et al discloses a plasma generator (See column 6, lines 1-13) comprising a system of plasma sterilization in a chamber (See column 2, lines 35-44) achieved in the presence of moisture (See column 5, lines 7-13) at atmospheric pressure (See column 5, lines 56-67) and at ambient temperature (temperature above ambient temperature is

still considered ambient) (See column 9, lines 1-9) in order to generate plasma at a lower power (See column 2, lines 55-59).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plasma sterilization system with moisture, atmospheric pressure and ambient temperature in Wu et al in the system of modified Kim et al (in each of claims 4-12 and 14-21) in order to generate plasma at a lower power.

15.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tayan Patel, Esq. whose telephone number is (571) 272-9806. The examiner can normally be reached on Monday-Thursday, 8 AM-6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TBP

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